ABSTRACT OF THE DISCLOSURE

A color translating UV microscope for research and clinical applications involving imaging of living or dynamic samples in real time and providing several novel techniques for image creation, optical sectioning, dynamic motion tracking and contrast enhancement comprises a light source emitting UV light, and visible and IR light if desired. This light is directed to the condenser via a means of selecting monochromatic, bandpass, shortpass, longpass or notch limited light. The condenser can be a brightfield, darkfield, phase contrast or DIC. The slide is mounted in a stage capable of high speed movements in the X, Y and Z dimensions. The microscope uses broadband, narrowband or monochromat optimized objectives to direct the image of the sample to an image intensifier or UV sensitive video system. When an image intensifier is used it is either followed by a video camera, or in the simple version, by a synchronized set of filters which translate the image to a color image and deliver it to an eyepiece for viewing by the microscopist. Between the objective and the image intensifier there can be a selection of static or dynamic switchable filters. The video camera, if used, produces an image which is digitized by an image capture board in a computer. The image is then reassembled by an overlay process called color translation and the computer uses a combination of feedback from the information in the image and operator control to perform various tasks such as optical sectioning and three dimensional reconstruction, coordination of the monochromater while collecting multiple images sets called image planes, tracking dynamic sample elements in three space, control of the environment of the slide including electric, magnetic, acoustic, temperature, pressure and light levels, color filters and optics, control for microscope mode switching between transmitted, reflected, fluorescent, Raman, scanning, confocal, area limited, autofluorescent, acousto-optical and other modes.